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ABSTRACT

This study examines the relationship between organizational structure and elements of three social system processes: (1) input and output boundary exchanges, (2) system production, and (3) use of facilities. The specific system processes are enrollment planning and student placement, curriculum continuity, and use of physical and social facilities. The organizational structure in question is the design used for educational subsystems at the local level in Venezuela. A related document is EA 003 564. (Author)

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A SOCIAL SYSTEM ANALYSIS OF EDUCATIONAL SUBSYSTEMS IN VENEZUELA

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This paper is about the problems of organizational structure (the relatedness of roles) and function (goal oriented action) of the educational system at the local level in Venezuela. Orienting this study was the general hypothesis that the particular organizational structure utilized at the local level tends to create dysfunctional forces which empede the maximization of goal achievement.

The study is cast in the framework of social systems theory, therefore, the local school branches are viewed as subsystems interacting within a greater system (the Ministry of Education). The Ministry, in turn, is interacting with the surrounding society. The effect of structure on three social system processes is analyzed: (1) input, output boundary exchanges; (2) system production; and (3) the use of facilities. The study is not an exercise in theory building, but it does use existing theory to explain and predict.

The writer used the typical field research design employed when studying organizational structure and function; that is, document analysis, observation, and interviews.(1)

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The study took place in the rapidly growing industrial city of Santo Tomé de Guayana, otherwise known as Ciudad Guayana. The conclusions drawn from this study have not been tested in other cities of Venezuela. The writer believes, however, that generalizing the findings to other urban areas of the nation would not be too dangerous because all cities in Venezuela maintain the same organizational structure for their educational subsystems.

An Organization as a Social System

In social systems theory, an organization is generally defined as "... a set of stable social relations deliberately created, with the explicit intention of continuously accomplishing some specific goals or purposes."(2) Because an organization is made up of goal oriented interacting human beings, it is a social system. The social system under analysis is the educational system in Venezuela.

An organization is composed of subsystems and systems which are embedded in a surrounding environmental system. Subsystems, systems, and environmental systems cannot be fully understood without taking into account the interrelationships of each. In this paper the major focus will be placed on the interrrelation-

ships between three subsystems (educational branches) that exist at the local level in Venezuela. Emphasis will also be placed on the relationships of these three subsystems with the surrounding environment.

The relationship with the surrounding environment is essential because, as Parsons points out, "The attainment of a goal is defined as a relation between a system (in this case a social system) and the relevant parts of the external situation in which it acts or operates. This relation can be conceived as the maximization, relative to the relevant conditions such as costs and obstacles, of some category of output of the system to objects or systems in the external situation."(3) In other words, goal attainment cannot be reached unless the system produces some identifiable output which becomes an input for another system.

Goal attainment, however, is not an absolute in the sense of "all or none." Implicit in goal attainment is a gradation from minimum to maximum. Quality, quantity and type are three characteristics (relative to relevant conditions such as costs and obstacles) that contribute to the degree of goal attainment. The receiver system is ultimately the one which signals the degree of goal attainment achieved by the producer system.

In this study the outputs are the students who graduate

from the educational subsystems in Ciudad Guayana. The systems receiving the educational outputs are institutes of higher learning or business and industry.

An educational system with outputs must have inputs. In this study the only inputs considered will be students enrolling in the various subsystems. Input and output are, in effect, boundary exchanges with other systems.

In order for a system to be aware of what the "needs" of the environment are, it must rely on a process of negative feedback. That is, "Information of a negative kind which enables the system to correct its deviations from course."(4) The course is set by the environmental need. Negative feedback enables a system to evaluate its product and methods of creating that product. The required adjustments can then be made. In this paper the process of negative feedback includes the techniques used by the local educational subsystems to gather information on student placement, the acceptability of student output, and the "needs" of universities, business, and industry.

After entering the educational system, the student goes through a production system and is eventually converted into an output. The production system is basically the teacher-student relationship. The curriculum as a tool of "learning experience"

will be the part of the production system which is analyzed in terms of its relationship to structure.

Social systems theory is basically concerned with human relationships rather than the constant attributes of physical facilities. However, facilities are extremely important when it is taken into account that role performance is often dependent on the presence of certain facilities. In the words of Parsons and Shils, "Facilities thus are objects of orientation which are actually or potentially of instrumental significance in the fulfillment of role-expectations. They may consist of physical objects, but not necessarily .... In the same sense that we speak of the rights to the action of others and the obligations to perform the actions expected by others, the facilities which are necessary roles are likewise the objects of rights and obligations."(5)

The relationships between structure and the use of two types of facilities will be explored. One type of facility will be the physical inventory material found in the school subsystems. The other type of facility will be the "rights to the action of others." In this case the "rights" to the action of certain educational specialists.

Organizational Structure

Social systems are made up of human beings who, within the context of a role, interact with each other in well defined patterns. Each role is elaborated in terms of, among other things, task responsibility and decision-making authority. A hierarchy is established in the system and is distinguished by varying degrees of authority and responsibility. The relationship between roles, and the dynamic of this relationship, is patterned and controlled by elements such as authority, norms, communication, knowledge, rank, etc. The relationship between roles is referred to as structure.

The entire Venezuelan educational system has a structure, and so do the individual subsystems in Ciudad Guayana. The subsystems in Ciudad Guayana are dependencies of the Ministry of Education. This dependence is well defined by norms and expectations, and in many situations the subsystems would be unable to function without the Ministry initiating the action (making the decisions). In other instances the subsystems would be able to act without the Ministry initiating the action. In this paper, processes will be examined which have a minimum dependence on the Ministry. In this way the Ministry is held as constant as possible.

Interdependence vs. Functional Autonomy of Subsystems

Social system theory is based on the view that subsystems are related to systems which make up greater systems. The dependence of the relationships, however, varies with each system. The students, for example, depend more on the teachers for learning experiences then they do on the janitors.

Thus, there are degrees of interdependence between social systems. Goldner states that "systems in which parts have a 'high' functional autonomy may be regarded as having a 'low' degree of system interdependence; conversely, systems in which parts have 'low' functional autonomy have a 'high' degree of system interdependence."(6)

The concept of functional autonomy is usually used with respect to the degree of interdependence between a subsystem and its "parent" system, for example: the interdependence of a branch department store and the central office, or a school district and the Ministry of Education. In this study, the concept of functional autonomy will be used to illustrate the interdependence of educational subsystems. In specific, the three educational subsystems in Ciudad Guayana.

Interdependence of subsystems can possess the character of formal structural interdependence or informal interdependence

based on working relationships. There is also the case where the subsystems have no interdependence whatever even though they are part of the same system.

FIGURE I

Formal Structural Interdependence

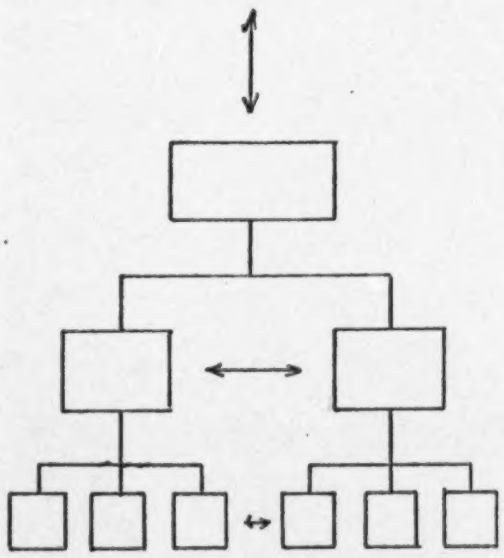


FIGURE II

Informal Interdependence

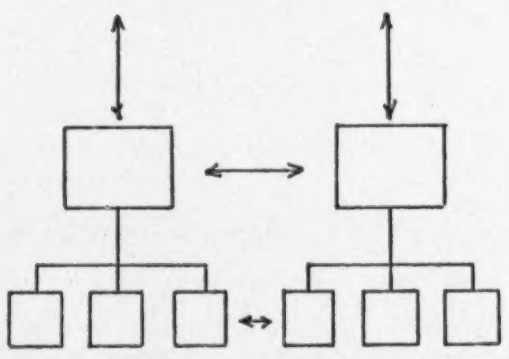


FIGURE III

No Interdependence

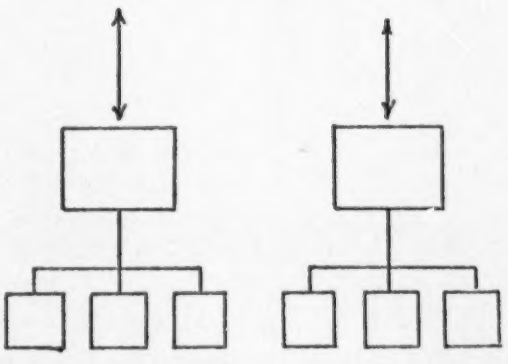


Figure I represents two subsystems that possess the character of formal structural interdependence. They are linked together by a role which supersedes the subsystem boundaries. The superordinate role is in a hierarchical position to control and coordinate the behavior of the members of the two subsystems.

Boundaries between the subsystems tend to be low thus permitting, and often requiring, a high level of interaction. Activity in one subsystem tends to have a consequence for the other, therefore, coordination is essential. The vertical arrow indicates that one line of authority establishes the formal interdependence between the subsystems and the greater system.

Figure II has no role in the structure which supersedes the subsystem boundaries, nevertheless, the horizontal arrows indicate that a certain degree of interdependence exists. The interdependence in this case is informal and not imposed structurally as is the case in Figure I. The interdependence is voluntary and to a great extent depends on effective patterns of communications. The vertical arrows indicate that there are two lines of authority establishing formal interdependence between the subsystems and different segments of the greater system.

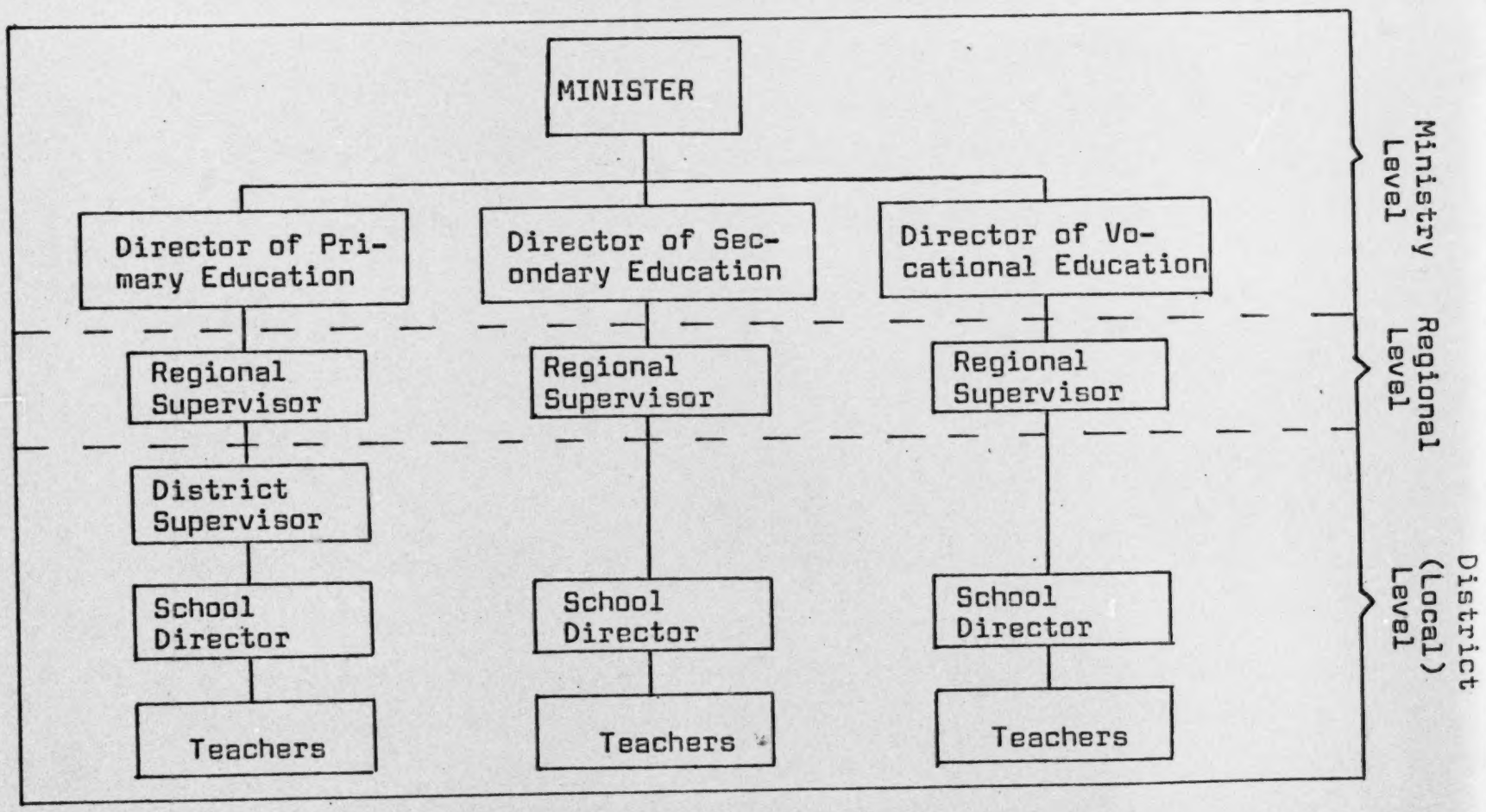
Figure III represents two subsystems which are functionally autonomous with no interdependence whatsoever. There are no roles in the structure which supersede branch boundaries. The lack of horizontal arrows indicate that no informal patterns of interaction exist. It cannot be assumed that the two subsystems would not benefit from collaboration, coordination, and communication, only that no such interaction is taking place.

Organizational Structure of the Greater System

Ciudad Guayana is the fastest growing city in Venezuela. In 1969 the population passed 115,000 and was growing at a rate of approximately 13 per cent per year.(7) The school system in the city (as well as every other city in Venezuela) is made up of three educational subsystems: primary, middle academic (liceo), and middle vocational (technical-industrial and commercial).(8)

FIGURE IV

Organizational Structure of Educational Branches



As Figure IV indicates, the 33 primary schools in Ciudad Guayana form a school district. Each primary school has a director who is the maximum authority within the school. The 33 schools have a district supervisor who is the maximum authority for primary education at the local level. The district supervisor's office is in Ciudad Guayana. The 33 primary schools and the district supervisor form a subsystem which is dependent on the regional supervisor for primary education. His office is located in a city approximately 100 miles from Ciudad Guayana. The regional supervisor is the maximum authority over several primary school districts in the region. The next higher role is the national director of primary education whose office is located in the Ministry of Education in the capital city.

The two liceos in the city each have directors who are the maximum authorities within their own schools. The liceos form another subsystem in the city.(9) This subsystem is dependent on a regional supervisor whose office is in the same city as that of the regional primary school supervisor. These two offices are not linked structurally at the regional level. The next higher level is the national director of secondary education whose office is in the Ministry of Education.

The vocational schools of the city also form a subsystem. They are dependent on a regional supervisor whose office is

located approximately 300 miles from Ciudad Guayana. The next higher level is that of the director of vocational education whose office is in the Ministry of Education.

The Ministry of Education is the highest hierarchical level in the national educational system. The Minister of Education is dependent on the President of the Republic of Venezuela.(10)

Formal Functional Autonomy of Subsystems

Figure IV illustrates that there are no structural linages between the educational branches at the local level. (Henceforth, the terms branches and subsystems will be used interchangeably when referring to the local level.) That is, no role exists at the local level which supersedes the boundaries of primary, liceo and vocational subsystems. Therefore, they are structurally autonomous with no formal system interdependence (as illustrated in Figure III). One of the first steps taken in this study was to determine whether or not informal interdependence existed between the branches (as illustrated in Figure II).

Informal Interdependence

Separate interviews were held with the maximum authorities within each subsystem, as well as with all the primary school

directors. Only the most revealing responses are reported here. The principle question asked was: How often do you meet with educational leaders of other branches in order to coordinate activities or discuss problems of mutual interest?

Liceo Director. "I never see the district supervisor of primary education. We have nothing to see each other about. There seems to be a divorce between the educational branches in this city. No one seems to be interested in establishing relations. It's unfortunate but that's the way it is."

Primary School Director. "I see them /middle school directors7 from time to time, but we almost never talk about our work. None of them ever come here to talk about the primary schools. The last time I was at the Technical-Industrial School was when it was inaugurated."

Director of Technical-Industrial School. "The District Supervisor of Primary Education has never been to this school during the five years of its existence. There is no policy of coordination between any of the branches in this city."

Director of a Primary School. " I never meet with the liceo or vocational people because we have nothing in common."

Liceo Professor. "Four years ago some of us invited a group

of sixth grade teachers to attend a meeting at which we wanted to discuss some of the academic weak points we observed in primary school graduates. We wanted to find a way to cooperate with the teachers so that the problems would be reduced. About 20 sixth grade teachers showed up. They became angry because they thought that we were implying that they were not doing their job. That ended our first and last attempt."

In short, the writer concludes that the educational subsystems in Ciudad Guayana have a character of low interdependence in a formal and informal sense. The writer could find no patterned interaction existing between the subsystems.

The Relationship of Organizational Structure to Input and Output Boundary Exchanges.

It has been determined that within the context of structure, the three educational subsystems have a character of high functional autonomy.(11) The next step is to determine the effect that this particular organizational structure has on specific educational processes. In other words, what is the effect of structure on function.

The first question concerns the effect of strucure on specific input, output boundary exchanges. That is, the effect of

structure on the students coming into and leaving the subsystems. The process of students entering the subsystems will be referred to as enrollment planning. The process of student leaving the middle school subsystems will be referred to as placement. Student dropout will not be considered. Enrollment planning in the secondary schools will be considered before the process of enrollment planning in the primary schools.

Enrollment planning for the social demand of education is conducted in Ciudad Guayana by the leaders of each subsystem. Three months prior to the beginning of each school year the local branch leaders submit requests to the Ministry of Education for more teachers. These requests are based on the number of students that are expected to enroll in the distinct subsystems. Based on this information, the Ministry of Education makes a decision on the number of teachers to be allocated to each subsystem. The local subsystem leaders do not make the allocation decisions on the enrollment plans, but they do prepare the plans. How are these plans prepared, and how does structure affect the preparation?

Liceo Director. "Planning for new students is usually based on the enrollment of the previous year. The Ley de Educación, /educational law/ says that we must admit every qualified sixth grade graduate who wants to enroll. This school year /1968/1969/

many more students enrolled than we had anticipated. Some of the classes had up to 116 students /normal class size is 45 students/. About two months passed before the new teachers arrived."

During the interview the writer had a copy of the sixth grade primary school enrollment. When the Liceo Director saw the enrollment figures, he reported that he had not known that such a document existed. He stated that in the past he had never gone to the primary school supervisor to ask him for information on enrollments.

Supervisor of Primary Education. "They /middle school directors/ never come here and ask for information on our enrollments."

Liceo Director. "At our Liceo we sometimes ask the directors of the nearby primary schools for figures on their sixth grade enrollment. We calculate that this liceo will receive about 60 per cent of them. We do not coordinate our work with any of the other middle schools. Actually, our technique is not very scientific. We don't know what to expect two years from now, let alone five years. No enrollment projections are calculated into the future. We don't know anything about the demographic growth pattern in this city. I doubt that they

even know anything at the Ministry about the growth pattern of this city."

The technique of enrollment planning employed in the primary school subsystems is basically the same used in the middle school subsystems. Planning for the first grade enrollment is based on the enrollment of the previous year. A pre-enrollment is held in the primary schools, but this is basically designed to ensure places for students who are already in the subsystem.

The writer found that errors in enrollment planning were often made at individual primary schools.

Primary School Director. "This year I had to turn away at least 300 children who wanted to enroll. More arrived than we had anticipated. It's not a question of space because we have 5 empty classrooms. We don't have the necessary teachers."

In a classroom utilization study the writer found over 60 empty classrooms in the primary schools. This figure is significant in the light of the fact that approximately 20 per cent of the children of primary school age are not enrolled. Part of the problem is a reluctance of the Ministry to appoint all the teachers requested. The reluctance to appoint teachers can be attributed partially to the insecurity the Ministry feels over adopting the enrollment plans.

In sum, the existence of an organizational structure which provides for high functional autonomy and low interdependence of subsystems has the effect of creating a fragmented rather than coordinated planning behavior. Each subsystem tends to approach its planning task from an "individual entity" point of view. The educational leaders do not view the subsystems as connecting links in a network of schools.

No one at the local level feels responsible for coordinating student input between subsystems. No one feels responsible to consider the demographic growth pattern of the city and translate this into projections on the future need for students space, teachers, equipment and schools. No one at the local level can manipulate rewards or punishments as motivation devices to induce collaboration. In brief, no one is responsible for viewing enrollment planning as an integrated process for all three subsystems in the city.

The fragmented planning behavior tends to create a dysfunctional force which impedes goal attainment because of difficulties many students encounter as they try to cross subsystem boundaries. The difficulties might manifest themselves in anything from overcrowded classrooms to complete rejection of students.

A simple "if - then" hypothesis predicts the consequences of a change in organizational structure. If high functional

autonomy of subsystems leads to fragmented planning behavior, then high interdependence of subsystems will lead to integrated planning behavior.

The new organizational structure might take the form illustrated in Figure I. The role which supersedes subsystem boundaries is in a hierarchical position to control and coordinate the behavior of members of the three subsystems. The role incumbent is in a position which requires him to draw together an integrated enrollment plan.

The prediction does not suggest that more sophisticated strategies of enrollment planning will ensue. Technique is a matter of training rather than structure.

The other dimension of boundary exchange is student output. In this study, student output is considered to be placement. Because the labor law in Venezuela states that individuals under 18 cannot obtain a work permit, only placement from the middle schools will be considered.

The interdependence of systems in this case will refer to the relationship of the middle school subsystems to that of the surrounding environment. The surrounding environment refers to those systems which need as inputs those outputs coming from the

middle school subsystems. The environmental systems include business and industry as well as institutes of higher learning.

Two important organizational characteristics are associated with student output. As mentioned previously, goal attainment can only be achieved if the output of the educational system becomes an input of the environmental system. Just producing an output is not enough.

The second important organizational characteristic that is associated with placement is negative feedback. Negative feedback is necessary to inform a system as to how well its output is being received by other systems. Also, negative feedback gives guidance to the adjustments necessary to bring the output back into accord with the environmental need.

In a formal sense, the middle school subsystems are functionally autonomous from the employment systems and university systems. No formal roles exist at any hierarchical level which supersedes these branch boundaries. That, of course, is to be expected. The key step at this point is to determine the degree of informal system interdependence that exists. That is, the degree of coordination, collaboration, and communication that exists between the systems in question.

The writer interviewed the middle school directors to determine the nature of the placement process.

Liceo Director. "The liceos are designed to prepare students for further academic training at the universities or pedagogical institutes. The liceo isn't intended to prepare students to enter the labor force after they graduate from here. After graduation, we don't know what happens to our students. We have never conducted any studies to determine how many actually go to the university or how many end their education and find jobs. The liceo doesn't play a very active role in assisting the graduate to find scholarships for further study. We don't have specific information about the universities to show our students. Actually, we have very little direct contact with the universities in the country."

Director of the Industrial-Technical Institute. "This institute does not have a placement section. Sometimes our instructors try to help their students find jobs, but that is on a voluntary basis. We have never conducted a study to determine how many of our graduates find work, or the type of work they receive. Information as to what happens to our graduates would be helpful, but we aren't expected to gather it."

Little visible interaction takes place between the systems

in question. The low interdependence of systems means that the producer-output systems and receiver-input systems can function without directly taking the other into consideration. As a result, no information becomes available to the schools which reflect on the degree of goal attainment.

Under conditions of high functional autonomy and low interdependence a dysfunctional chain of events develops. Because the educational subsystems do not concern themselves with placement, they feel under no pressure to investigate what happens to their graduates. As a result, the educational subsystems receive no negative feedback as to whether or not the graduates are received as inputs in other systems. Therefore, no negative feedback is available as to the efficiencies and deficiencies of graduates. This being the case, the educational subsystems are unable to make adjustments in their training programs which would have the effect of making the graduates into more adequate inputs for the receiving systems.

If the low level of interdependence between the output producer subsystems and the input receiver systems is modified to a higher level of interdependence, then a greater amount of negative feedback will provide a measure of the degree of goal attainment and provide guidance for the desired changes in the production process of the educational subsystem.

The Effect of Structure on System Production

This section of the paper concerns the effect of organizational structure on the production process of subsystems. In this case, the production process refers to the learning experience which is a direct result of the teacher-student relationship. Integrating and directing the learning experience is the curriculum.

The concept of curriculum has been defined as a plan for learning which has been built around a learning theory and oriented to the needs of a specific society. The society includes both the student and the surrounding environment. A curriculum is an instrument of at least three dimensions. The primary dimension is the planned learning experience, and the supporting dimensions are content and teaching strategy.

The notion of "curriculum continuity" suggests that the plan for learning experiences begins at the first grade of primary school and ends at the final grade of middle school. The curriculum is thought of as a "whole," and each individual unit contributes to the whole. It is made up of an ever expanding body of interrelated principles, concepts, generalizations, and content. Curriculum continuity does not suggest that the plan for learning experiences is a rigid, lock step process. On the

contrary, it is an "open" plan being revised continually with the objective of taking into account more adequately the changing needs of the specific culture in question.(12)

The question at this point of the study concerns the relationship between the particular organization structure of the educational subsystems at the local level and the process of curriculum continuity. Earlier it was demonstrated that in a formal sense the three educational subsystems in Ciudad Guayana are functionally autonomous. The analysis of the relationship between structure and production requires an understanding of the degree of informal interdependence between the three subsystems with reference to curriculum continuity.

Central to curriculum continuity is the thought that each individual academic unit fits into the fabric of the whole and contributes to the development of the whole. Thus, the learning experience is continually oriented toward coming experiences and is designed to prepare the student for them.

A clue to the level of curriculum continuity existing would be the degree to which the primary school teachers have a clear understanding of the middle school curriculums. This understanding is important because of the significant role the primary school teacher play in orienting the students toward their future

academic and occupational careers. If the primary school teachers do not have a clear understanding of middle school learning experiences, then a low level of curriculum continuity exists between the subsystems.

The writer was unable to find any patterned process by which the primary school teachers were informed about the middle school curriculums (and vice versa). On the contrary, many indications were found to suggest that the primary school teachers are quite uninformed. These indications can be classified in terms of information exchange, personnel contact, and formal education.

With reference to information exchange, the district supervisor of primary education reported, "We never receive any books, documents, or pamphlets of any kind which refer to the academic process of the middle schools."

The lack of information exchange can be very significant. At the beginning of the 1969/1970 school year, for example, the first three years of the middle school academic program was revised. (13) The primary school supervisor reported that, "We haven't received a copy of the new curriculum, and we haven't been asked to take it into account." The writer was unable to find copies of the old or new middle school curriculums in any of the primary schools.

In terms of personnel contact, a liceo director reported, "The primary school teachers never come to visit us. Our two branches seem divorced of contact between the teachers." The primary school supervisor stated, "Our teachers don't know a great deal about the middle school programs. Contact between the branches is usually on a personal rather than professional level." One primary school director put it bluntly. "We don't know what is going on over there /middle schools/, and they don't know what is going on over here /primary schools/." With reference to formal education, it was found that the primary school supervisor, the directors, and the teachers attended normal schools; therefore, few have had personal experience as students in middle schools.

The teachers of the three subsystems are not interacting in a way to provide systematically information about various aspects of the "whole" curriculum. Lacking an understanding of the curriculum as a whole, the teachers are hindered in their ability to project the learning experience forward and backward through the grades. Each academic unit is seen as a value in itself rather than for what it contributes to the whole curriculum.

What is the effect on the "learner" when the primary school teachers ability to project learning experiences is truncated

at the boundary between primary and middle schools? Think of the student as a decision maker trying to plan his educational career. March and Simon point out, "The organizational and social environment in which the decision maker finds himself determine what consequences he will anticipate, what ones he will not; what alternatives he will consider, what ones he will ignore.... Choice is always exercised with respect to a limited, approximate, simplified 'model' of the real situation.... the chooser's .... 'definition of the situation.' " (14)

The primary teacher plays a significant role in developing the "model" that the student obtains of the "real situation." In Ciudad Guayana the primary teachers lack specific knowledge about future learning experience of students. This situation can impinge appreciably on the "chooser's definition of the situation."

Even though a standardized curriculum is used in Venezuela, the curriculum can be enriched and the teaching strategies improved. The functional autonomy between educational subsystems inhibits the primary teachers from receiving "enrichment inputs" as well as new ideas of teaching strategy from the middle school subsystems. In this instance, a tendency toward "closed" rather than "open" curriculum is the result.

In terms of learning experience, therefore, the low interdependence of subsystems tends to create dysfunctional forces which impede the maximization of goal attainment. The high functional autonomy of subsystems reduces the level of curriculum continuity between subsystems. The teachers of any one subsystem are not well informed of the learning experiences that the students will receive in other subsystems. The student as a decision maker, therefore, receives a more simplified and limited perspective of his future academic experiences than he would if there were a higher level of interaction between the teachers of the various subsystems. The limited and simplified perspective of future academic experiences can impinge on the capability of the student to select his future academic and career goals.

If a structural change were made which provided for a high interdependence of subsystems (by creating a role which supersedes branch boundaries), a controlling and coordinating mechanism would be present to draw the teachers of the three subsystems into an intellectual confrontation with the <u>total</u> curriculum. An appropriate hypothesis leading from the above situation is that a structural change from a low to high interdependence of subsystems will lead to a greater degree of curriculum continuity between the subsystems. This hypothesis, of course, remains to be tested.

The Effect of Organizational Structure on the Use of Facilities

A facility is thought of as an instrument which is significant in the sense that it permits a more effective role performance. Outside the framework of role performance, a facility serves no useful purpose. A facility may be, among other things, a physical object, a cultural object, or a social object. Facilities as social objects can be thought of as "the rights to the action of others and the obligations to perform the actions expected by others...."(15)

This portion of the study examines the relationship between an organizational structure of functionally autonomous subsystems and the use of facilities. In this case, the physical facilities are items of school inventory. The study also examines the relationship between structure and "the rights to the actions of others." That is, the rights of individuals in one subsystem to use the actions of individuals who are members of another subsystem.

All of the public schools within the three educational subsystems in the city receive equipment and furnishings for which the director is responsible. A significant question concernes the formation of a balance of inventory between the subsystems. That is, when one subsystem has a shortage and another a surplus,

how are the exchanges made across subsystem boundaries? Educational officials where queried on this subject.

Liceo Director. "To my knowledge there has never been an official transfer of material between schools. The two liceos often loan material to each other, but only on a short run basis. No director likes to see his equipment gone for long. There is no way to transfer equipment between branches. In fact, we don't even know what they have over there."

Primary School Supervisor. "Sometimes we expect more students in a specific school than actually enroll, so we have unused equipment. In cases such as this, I can send the equipment to another primary school on a loan besis. We cannot transfer equipment between branches. The Ministry would have to do that."

There are instances when individual subsystems would benefit from the capability of crossing system boundaries with equipment. For example, during the first few weeks of the 1968/1969 school year, the liceos where so overcrowded that many students did not even have chairs. At the same time there where several fully equipped and unused classrooms in the primary schools. The high system boundaries did not permit a transfer.

There are also instances when the primary schools could benefit by a short or long run inventory exchange between subsystems. In specific, the primary school subsystem could benefit from the use of audio-visual aids, vehicles, mimeograph machines, special maps, sports equipment, and the like.

The other question concernes the effect of organizational structure on the use of facilities as social objects. How does the presence of functionally autonomous subsystems affect the "rights to the action of others." The arrival of a guidance specialist to Ciudad Guayana will serve as an example.

The guidance specialist was assigned to work in one of the two middle school subsystems. He is the only guidance specialist in the city. In an interview, the writer asked him whether or not he could assist the primary schools in setting up a guidance program.

Guidance Specialist. "I am employed to work at this school. I would not be able to spend official time working with other branches because I am supposed to work here."

Because of the functional autonomy between the educational subsystem, the same type or response would have to be given by any specialist assigned to a specific subsystem. The services of specialists in areas such as health, curriculum development,

audio-visual aids, in-service training, etc., would be unavailable across subsystem boundaries.

In terms of the use of physical and social facilities, therefore, the low interdependence of subsystems tends to create dysfunctional forces which impede the maximization of goal attainment. The high functional autonomy between subsystems inhibits cross boundary exchanges of physical and social facilities even when the exchange would be beneficial for the "whole." Teachers, therefore, are inhibited in their role performance due to the lack of facilities which are, in fact, present in other subsystems.

If a structural change were made which provided for a high interdependence of subsystems (by creating a role which supersedes branch boundaries), a controlling and coordinating mechanism would be present to initiate boundary exchanges of facilities when the need exists. An appropriate hypothesis leading from the above situation is that a structural change from low to high interdependence of subsystems will lead to an increased exchange of facilities across subsystem boundaries. In a practical sense, the high interdependence of subsystems might result in processes such as centralized purchasing, storage, and maintenance.

Conclusion

This study examines the relationship between organizational structure and elements of three social system processes: input, output boundary exchanges, system production, and the use of facilities. The specific system processes are enrollment planning and student placement, curriculum continuity, and the use of physical and social facilities. The organizational structure in question is the design used for educational subsystems at the local level in Venezuela.

The organizational structure at the local level creates subsystems with high functional autonomy and low interdependence. It was found that informal working relationships did not develop even in those areas where each subsystem showed a specific need disposition toward the others.

The lack of coordinating and integrating forces between the subsystems tended to result in fragmented processes of enrollment planning and placement, curriculum continuity, and the use of facilities. The fragmentation of processes was found to have specific dysfunctional consequences which detracted from the maximization of goal achievement.

If a role which supersedes branch boundaries were created at the local level, the organizational structure would, of course,

be changed. The new organizational structure would be characterized by the presence of a mechanism which could control and coordinate a higher level of interaction across subsystem boundaries. The subsystems, therefore, would be drawn toward an integrated whole.

The writer hypothesized that the change in organizational structure will result in more functional processes of: (1) input, output boundary exchanges, (2) curriculum continuity, and (3) the use of physical and social facilities. In short, the fragmented processes which detract from goal attainment will give way to continuous processes which contribute to goal attainment.

A Closing Hypothesis

The writer cannot close without at least speculating on the reason why the organizational structure of high functionally autonomous subsystems is maintained in its present form. No doubt there are historic, economic, and even political forces contributing toward the continued existence of the specific structure. The writer would like to hypothesize a socio-psychological explanation.

After interviews with over 100 educators representing all hierarchical levels of the national educational system, the writer hypothesized that the educators perceive the subsystems as being made up of physical objects. That is, the system is made up of physical objects rather than interacting human beings. The task of the leaders, therefore, is to find the right mix of objects to place in each subsystem so that the waste is minimal. This approach is something like trying to put together the pieces of a puzzle so that there is no overlap or vacant spaces. Pieces in the puzzle are teachers, students, buildings, and equipment.

Processes such as coordination, collaboration, and communication somehow do not seem to have the same importance when thinking in terms of "physical systems." Responses to problems, therefore, tend to come in the way of more physical parts for the system, such as: more teachers, buildings, books, and equipment.

If the subsystems are seen as being made up of physical parts, then the boundaries of these subsystems are seen as geares of a wheel which mesh at fixed points. With this mental perspective, subsystems of high functional autonomy and low interdependence seem to be normal as well as rational.

December 1969
MH/ist.-

FOOTNOTES

[1]For information on the methodology of field studies of formal organizations, see: Peter M. Blau and W. Richard Scott, Formal Organizations: A Comparative Approach. California: Chandler Publishing Company, 1962, pp. 15-26.

[2]Arthur L. Stinchcombe, "Social Structure and Organizations," (Ed.) James G. March, Handbook of Organizations. Chicago: Rand M. Natty and Company, 1965, p. 142.

[3]Talcott Parsons, "Suggestions for a Sociological Approach to the Theory of Organizations," (Ed.) Amital Etzioni, Complex Organizations. New York: Hold, Rinehart and Winston, 1961.

[4]Daniel Katz and Robert L. Kahn, The Social Psychology of Organizations. New York: John Wiley and Sons, Inc., 1966, pp.22.

[5]Talcott Parsons and Edward A. Shils, "Values, Motives, and Systems of Action," Toward a General Theory of Action. New York: Harper and Row, 1965, p. 199.

[6]Alvin W. Gouldner, "Organizational Analysis," (Eds.) Robert K. Merton, Leonard Broom, Leonard S. Cottrell Jr., Sociology Today. New York: Basic Books, Inc., 1959, p. 419.

[7]For an extensive report on the social and economic development of Ciudad Guayana, see: Corporación Venezolana de Guayana, Informe Annual, 1968. República de Venezuela, 1968.

[8]The primary school cycle is 6 years, the liceo cycle 5 years, and the vocational cycle anywhere from 2 years to 6 years depending on the program.

[9]The liceos do not form a subsystem in the strict sense of the term because they are not responsible to a superior at the local level. Considering them as a subsystem will detract little from this analysis.

[10]Ley de Educación, Venezuela.

[11]The writer also found high functional autonomy between the distinct regional offices.

[12]Hilda Taba, Curriculum Development: Theory and Practice. New York: Harcourt, Brace and World, Inc., 1962.

[13]Dirección Técnica, Programas del Ciclo Básico Común, Ministerio de Educación, Caracas, 1969.

[14]J.G. March and H.A. Simon, Organizations. New York: Wiley, 1958, p. 130.

[15]Parsons, loc. cit.